

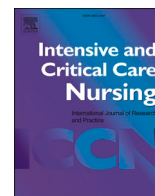


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## Correspondence

## Tolerance of enteral nutrition during prone therapy in a COVID-19 cohort

Dear Editor,

Administration of enteral nutrition (EN) while patients are in prone position (PP) for treatment of acute respiratory distress syndrome (ARDS) is inconsistently performed; nutrition literature generally supports this practice, but bedside nursing clinicians remain concerned about intolerance of gastric feeds, and increased risk of vomiting and aspiration (McClave et al., 2016; Reigner et al., 2010; Saez de la Fuente et al., 2016). We sought to characterize utilization of EN in prone patients with COVID-19 ARDS, tolerance and proportion of patients that met EN goals while in prone position. This was an IRB-exempt study that evaluated 28 patients who underwent 149 prone cycles and received EN. Prior to placement in prone position a feeding tube (FT) was placed; the type and location of feeding tube was at the discretion of the nurse and/or provider. EN tolerance was assessed based on documentation in the electronic medical record including nursing and providers documentation, included holding of EN for high gastric residual volumes, vomiting and administration of anti-emetics.

Patients were in PP for an average  $5.3 \pm 3.4$  cycles and  $90.8 \pm 54.7$  hours and required  $2 \pm 1.1$  tube placements during prone therapy. Most of the feeding tubes (60.7 %) were in the gastric position as compared to post-pyloric, with half (50 %) of the patients receiving early enteral nutrition. While in prone position less than a quarter (21 %) met  $\geq 80$  % of target EN rate, with 21 % of the patients receiving only trophic feedings while in prone position with no documented evidence of EN intolerance. While in prone position similar average rates of EN was administered [28.5 mL vs 29 mL] with a FT placed in gastric vs post-

pyloric position; however, a higher proportion of patients in the gastric FT cohort achieved a higher percentage of target EN (54.8 % vs 47.4 %), (Table 1).

Tolerance of EN was compared while patients were in prone position (vs supine) and we found increased gastric residual volume (GRV) while in prone vs supine [88 mL vs 0 mL] (Table 1), with four (2.7 %) occurrences of GRV > 500 mL over the course of 149 prone cycles which all occurred in the prone position. There was a limited number of adverse events related to EN during prone therapy. Vomiting and aspiration each occurred in two patients (7.1 %), equally between prone and supine, but all cases were noted when feeding tubes were placed in gastric position (Table 1). There were similar occurrences of tube dislodgement while in prone compared to supine position (Table 1).

Our study, which is the first that describes outcomes of enteral nutrition while in prone position in a cohort of COVID-19 patients, found a low proportion of patients meeting target EN goals, with similar incidence of EN adverse events noted in supine vs prone position. Our study found that advancement of EN occurred infrequently with poor documentation of reasons for lack of EN advancement. Formalized protocols for initiation of EN during prone position are crucial to guide nursing staff and improve utilization.

## Declaration of Competing Interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

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**Table 1**  
Outcomes based on tube placement and patient positioning.

Outcomes	Gastric, n = 17	Post-pyloric, n = 11
Percent enteral feeding goal rate met total, mean (SD)	54.8 (29.2)	47.4 (27.5)
Mean feeding rate during prone position (PP), mean (SD)	28.5 (17.3)	29 (18.4)
% residuals during PP, median [IQR]	35.1 [0–100]	70.4 [15.6–100]
Vomiting (PP or supine), n,%	2 (11.8 %)	0 (0 %)
Aspiration, n, %	2 (11.8 %)	0 (0 %)
Residuals throughout prone therapy duration (ml), median [IQR]	88 [0–305]	0 [0–128.9]
Tube dislodgement*	3	3
Vomiting incidents**	1	1
Aspiration incidents***	1	1

\*2 additional instances of tube dislodgement happened during transition period.

\*\*Vomiting defined as: emesis recorded in electronic record of ins and outs, mention of emesis/vomiting in notes during PP range.

\*\*\*Aspiration defined as: evidence of aspiration on chest X-ray or mention of aspiration in notes during proning range.

IQR, interquartile range; SD, standard deviation; PP, prone position.

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